

C L A I M S

What is claimed and desired to be secured by Letters Patent is as follows:

1. In an implanter apparatus for implanting a pellet in an animal through a needle by movement of an elongated impeller from a retracted position within an implanter housing to an extended position through said needle by pivoting a trigger from an armed position to a release position, the improvement comprising:
 - (a) a slide member slidably mounted on said housing, engaged with said trigger and said impeller, and operative to retract said impeller to said retracted position and extend said trigger to said armed position upon manual reciprocation of said slide member.

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2. An implanter apparatus as set forth in Claim ~~1~~⁴ and including:

- (a) a manual grip extending from said housing; and
- (b) said trigger being pivotally connected to said housing and being positioned to pivot out of said grip toward said armed position and into said grip toward said release position.

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3. An implanter apparatus as set forth in Claim ~~2~~⁵ and including:

- (a) a pellet magazine having a plurality of pellet doses packaged therein, said magazine extending through said grip to enable said pellet doses to be successively aligned between said impeller and said needle.

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4. An implanter apparatus as set forth in Claim ~~3~~⁶ and including:

- (a) a magazine feed mechanism engaged between said slide member and said magazine, said feed mechanism advancing said magazine to align a successive pellet dose between said impeller and said needle each time said slide member is reciprocated.

5. An implanter apparatus as set forth in Claim 1 and including:

(a) a trigger cable operatively engaged between said trigger and said impeller and advancing said impeller from said retracted position toward said extended position upon pivoting said trigger.

6. An implanter apparatus as set forth in Claim 1 and including:

(a) a retractor cable operatively engaged between said slide member and said impeller and urging said impeller toward said retracted position upon reciprocation of said slide member.

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7. An implanter apparatus as set forth in Claim 4 and including:

- (a) an impeller spring operatively engaged between said housing and said impeller and resiliently urging said impeller toward said extended position when a spring force in said impeller spring is released;
- (b) a latch mechanism positioned within said housing to releasably retain a spring force in said impeller spring;
- (c) said slide mechanism, upon reciprocation, storing a spring force in said impeller spring and setting said latch mechanism to releasably retain said spring force; and
- (d) said trigger, upon pivoting toward said release position, causing said latch mechanism to release said spring force to thereby urge said impeller toward said extended position.

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8. An implanter apparatus as set forth in Claim ^{28 4}~~1~~ and including:

- (a) an impeller bias spring operatively engaged between said housing and said impeller and resiliently urging said impeller in a direction toward said extended position when said impeller is in said extended position.

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9.

In an implanter apparatus for subcutaneously implanting a pellet in an animal through a needle by movement of an elongated impeller from a retracted position within an implanter housing to an extended position through said needle upon pivoting a trigger from an armed position to a release position, the improvement comprising:

- (a) an impeller spring operatively engaged between said impeller and said housing and operable to resiliently urge said impeller toward said extended position when a spring force stored in said spring is released;
- (b) a latch mechanism positioned within said housing to releasably retain a spring force in said spring;
- (c) a slide mechanism slidably mounted on said housing and engaged with said trigger and said impeller in such a manner as to position said trigger in said armed position and said impeller in said retracted position and to store a spring force in said spring upon manual reciprocation of said slide mechanism; and
- (d) a release member connected to said trigger and operative upon movement of said trigger toward said release position to urge said impeller toward

said extended position thereby releasing said impeller from said latch mechanism to enable said spring to resiliently urge said impeller toward said extended position.

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10. An implanter apparatus as set forth in Claim ~~9~~ 11 and including:
- (a) a manual grip extending from said housing; and
 - (b) said trigger being pivotally connected to said housing and being positioned to pivot out of said grip toward said armed position and into said grip toward said release position.

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11. An implanter apparatus as set forth in Claim ~~10~~ 12 and including:
- (a) a pellet magazine having a plurality of pellet doses packaged therein, said magazine extending through said grip to enable said pellet doses to be successively aligned between said impeller and said needle.

¹⁴
~~12.~~ An implanter apparatus as set forth in Claim ¹³~~11~~ and including:

- (a) a magazine feed mechanism engaged between said slide member and said magazine, said feed mechanism advancing said magazine to align a successive pellet dose between said impeller and said needle each time said slide member is reciprocated.

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~~13.~~ An implanter apparatus as set forth in Claim ¹⁴~~12~~ wherein said magazine feed mechanism includes:

- (a) a rocker arm pivotally mounted on said housing, having a magazine pawl at a front end and a cam follower at an opposite rear end; and
- (b) said slide mechanism including a linear cam having said cam follower engaged therewith in such a manner that reciprocation of said slide mechanism causes said magazine pawl to successively advance said magazine.

14. An implanter apparatus as set forth in Claim 9 and including:

- (a) a trigger cable operatively engaged between said trigger and said impeller and advancing said impeller from said retracted position toward said extended position upon pivoting said trigger.

15. An implanter apparatus as set forth in Claim 9 and including:

- (a) a retractor cable operatively engaged between said slide member and said impeller and urging said impeller toward said retracted position upon reciprocation of said slide member.

¹⁶
16. An implanter apparatus as set forth in Claim 9 and including:

- (a) an impeller bias spring operatively engaged between said housing and said impeller and resiliently urging said impeller in a direction toward said extended position when said impeller is in said extended position.

17. An implanter as set forth in Claim 9 and including:
- (a) said housing having a front needle end with said needle mounted thereon and an opposite back end;
 - (b) an elongated release shuttle slidably mounted within said housing, said shuttle having a front end longitudinally spaced from a rear end and having a release cam positioned at said front end;
 - (c) an impeller carrier slidably mounted within said housing between said front end and said rear end of said shuttle, said impeller having a proximal end connected to said carrier and extending through said front end of said shuttle;
 - (d) an impeller retractor cable connected between said housing and said impeller carrier and passing about said rear end of said shuttle in such a manner that rearward movement of said shuttle toward said back end of said housing causes rearward movement of said impeller carrier;
 - (e) said latch mechanism including a spring carrier slidably mounted within said housing and having a latch pawl positioned at a front pawl end of said spring carrier, said spring carrier having a rear anchor end opposite said pawl end;

- (f) said impeller spring being connected between said housing and said spring carrier and resiliently urging said spring carrier rearward;
- (g) an impeller extender cable connected between said impeller carrier and said spring carrier and passing about said front end of said shuttle in such a manner that rearward movement of said spring carrier when said shuttle in a forward position causes forward movement of said impeller carrier;
- (h) said slide mechanism including an internal slide bracket slidably mounted within said housing, including a shuttle retractor positioned forward of said front end of said shuttle, having said impeller extending therethrough, and having a latch shoulder positioned in such a manner that rearward movement of said slide bracket urges said shuttle rearward to a position at which said spring carrier pawl engages said latch shoulder and forward movement of said slide bracket urges said spring carrier forward thereby storing a spring force in said impeller spring; and
- (i) a trigger cable connected between said shuttle and said trigger in such a manner that rearward movement of said shuttle pivots said trigger

toward said armed position and movement of said trigger toward said release position draws said shuttle and said impeller carrier forward to a position at which said release cam engages and releases said pawl from said latch shoulder thereby releasing said spring carrier to move rearwardly and resiliently urging said impeller toward said extended position by way of said extender cable.

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18. An implanter apparatus as set forth in Claim ²⁰ 18 and including:

- (a) an impeller bias spring connecting said extender cable to said spring carrier and resiliently urging said impeller in a direction toward said extended position when said impeller is in said extended position.

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~~19.~~

An implanter apparatus for subcutaneously implanting a pellet in an animal and comprising:

- (a) an implanter housing having a front end and a rear end;
- (b) a manual grip extending from said housing;
- (c) a tubular needle mounted on said front end of said housing and having a sharpened end for puncturing skin of an animal to enable implanting a pellet therethrough;
- (d) a pellet magazine holding a plurality of pellets sized to be implanted through said needle and positioned relative to said housing to selectively align a pellet with said needle;
- (e) an elongated impeller mounted in said housing to enable reciprocating movement between an extended position through said needle and a retracted position within said housing, said impeller being aligned with said needle to enable travel of a distal end of said impeller through said magazine to urge an aligned pellet through said needle;
- (f) an impeller spring operatively engaged between said impeller and said housing and operable to resiliently urge said impeller toward said extended position when a spring force stored in said spring is released;

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- (g) a latch mechanism positioned within said housing to releasably retain a spring force in said spring;
- (h) a trigger pivotally connected to said housing to enable movement between an extended armed position and a release position toward said grip;
- (i) a slide mechanism slidably mounted on said rear end of said housing and engaged with said trigger and said impeller in such a manner as to extend said trigger to said armed position, to move said impeller to said retracted position, and to store a spring force in said spring upon manual reciprocation of said slide mechanism; and
- (j) a release mechanism operatively connected between said trigger and said latch mechanism and operative upon movement of said trigger toward said release position to urge said impeller toward said extended position past said latch mechanism to thereby release said impeller spring and enable said impeller spring to urge said impeller toward said extended position.

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20. An implanter apparatus as set forth in Claim 19 and including:

- (a) said pellet magazine extending through said grip.

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0-21. An implanter apparatus as set forth in Claim ~~19~~²⁰ and including:

- (a) a magazine feed mechanism engaged between said slide member and said magazine, said feed mechanism advancing said magazine to align a successive pellet dose between said impeller and said needle each time said slide member is reciprocated.

²³
22. An implanter apparatus as set forth in Claim ~~21~~²² wherein said magazine feed mechanism includes:

- (a) a rocker arm pivotally mounted on said housing, having a magazine pawl at a front end and a cam follower at an opposite rear end; and
- (b) said slide mechanism including a linear cam having said cam follower engaged therewith in such a manner that reciprocation of said slide mechanism causes said magazine pawl to successively advance said magazine.

23. An implanter apparatus as set forth in Claim 19 and including:

- (a) a trigger cable operatively engaged between said trigger and said impeller and advancing said impeller from said retracted position toward said extended position upon pivoting said trigger.

24. An implanter apparatus as set forth in Claim 19 and including:

- (a) a retractor cable operatively engaged between said slide member and said impeller and urging said impeller toward said retracted position upon reciprocation of said slide member.

²⁴
~~25.~~ An implanter apparatus as set forth in Claim ~~19~~²⁰ and including:

- (a) an impeller bias spring operatively engaged between said housing and said impeller and resiliently urging said impeller in a direction toward said extended position when said impeller is in said extended position.

26. An implanter as set forth in Claim 19 and including:

- (a) an elongated release shuttle slidably mounted within said housing, said shuttle having a front end longitudinally spaced from a rear end and having a release cam positioned at said front end;
- (b) an impeller carrier slidably mounted within said housing between said front end and said rear end of said shuttle, said impeller having a proximal end connected to said carrier and extending through said front end of said shuttle;
- (c) an impeller retractor cable connected between said housing and said impeller carrier and passing about said rear end of said shuttle in such a manner that rearward movement of said shuttle toward said back end of said housing causes rearward movement of said impeller carrier;
- (d) said latch mechanism including a spring carrier slidably mounted within said housing and having a latch pawl positioned at a front pawl end of said spring carrier, said spring carrier having a rear anchor end opposite said pawl end;
- (e) said impeller spring being connected between said housing and said spring carrier and resiliently urging said spring carrier rearward;

- (f) an impeller extender cable connected between said impeller carrier and said spring carrier and passing about said front end of said shuttle in such a manner that rearward movement of said spring carrier when said shuttle in a forward position causes forward movement of said impeller carrier;
- (g) said slide mechanism including an internal slide bracket slidably mounted within said housing, including a shuttle retractor positioned forward of said front end of said shuttle, having said impeller extending therethrough, and having a latch shoulder positioned in such a manner that rearward movement of said slide bracket urges said shuttle rearward to a position at which said spring carrier pawl engages said latch shoulder and forward movement of said slide bracket urges said spring carrier forward thereby storing a spring force in said impeller spring; and
- (h) a trigger cable connected between said shuttle and said trigger in such a manner that rearward movement of said shuttle pivots said trigger toward said armed position and movement of said trigger toward said release position draws said shuttle and said impeller carrier forward to a

position at which said release cam engages and releases said pawl from said latch shoulder thereby releasing said spring carrier to move rearwardly and resiliently urging said impeller toward said extended position by way of said extender cable.

27. An implanter apparatus as set forth in Claim ~~26~~²⁶ and including:

- (a) an impeller bias spring connecting said extender cable to said spring carrier and resiliently urging said impeller in a direction toward said extended position when said impeller is in said extended position.

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